

What is claimed is:

1. A grease collection cartridge for holding kitchen waste grease as a landfill-acceptable solid comprising:
  - housing for containing the kitchen waste grease and having an inlet for receiving kitchen waste grease;
  - a mixing baffle within the housing; and
  - a reactant within the cartridge to solidify grease and oil.
2. The apparatus according to claim 1, wherein the housing has a lid with a plunger adapted to actuate a switch.
3. The apparatus according to claim 1, wherein the housing has a lid with a bearing surface in which a shaft of the mixing baffle is journaled.
4. The apparatus according to claim 1, wherein the housing has a cylindrical composite plastic body.
5. The apparatus according to claim 1, wherein the housing includes a plastic base.
6. The apparatus according to claim 5, wherein the plastic base includes a key on the exterior of the plastic base.
7. The apparatus according to claim 6, wherein the key is made of plastic.
8. The apparatus according to claim 1, wherein the mixing baffle is made of plastic.

9. The apparatus according to claim 1, wherein the mixing baffle has a main shaft.
10. The apparatus according to claim 9, wherein the main shaft has a “z” shaped cross section.
11. The apparatus according to claim 10, wherein the housing includes a base that has a bearing for the “z” shaped main shaft.
12. The apparatus according to claim 10, wherein the z-shaped main shaft is adapted to interlock to a driving shaft.
13. The apparatus according to claim 1, wherein the mixing baffle has openings.
14. The apparatus, according to claim 13, wherein the openings have louvers at their lower edges.
15. The apparatus according to claim 1, wherein the mixing baffle extends to two sides of the main shaft and louvers face opposite sides of the main shaft.
16. The apparatus according to claim 1, wherein the mixing baffle supports a package of the reactant.
17. The apparatus according to claim 16, wherein the package is made of a water-soluble material.

18. The apparatus according to claim 16, wherein the package includes an amount of sodium hydroxide (lye) sufficient to turn a volume of grease to be placed in the cartridge into soap.

19. The apparatus according to claim 1, wherein the housing has a water impervious inner liner.

20. The apparatus according to claim 1, wherein the housing has an outer wall layer of spiral wound paper tubing.

21. A disposable grease collection cartridge comprising:  
a cylindrical composite body;  
a lid on the body having an internal bearing;  
a base on the body having an internal bearing and an external key;  
a mixing baffle with a “z” shaped main shaft journaled in the bearings with openings on both sides of the shaft; and  
a water soluble package attached to the baffle containing a reactant to turn grease into soap.

22. A disposable grease collection cartridge comprising  
a cylindrical composite body having an outer wall of spiral wound paper tubing and a water impervious inner liner,  
a plastic base on the body having an internal bearing,  
a plastic lid on the body including an inlet forming an internal bearing,

an agitator within the body including a “z-shaped” shaft engaging the bearings on the base and lid, louvered openings, and a water soluble package containing an amount of sodium hydroxide (lye) sufficient to turn a volume of grease to be placed in the body into soap.

23. The apparatus according to claim 1, further comprising a cartridge holder assembly.

24. The apparatus according to claim 23, wherein the cartridge holder assembly is constructed of rotomolded plastic.

25. The apparatus according to claim 23, wherein the cartridge holder assembly is hollow.

26. The apparatus according to claim 25, wherein the hollow cartridge assembly serves as a grease storage tank.

27. The apparatus according to claim 23, wherein the cartridge holder assembly includes an inlet valve.

28. The apparatus according to claim 23, wherein the cartridge holder assembly includes a motor and a switch.

29. The apparatus according to claim 28, wherein the switch is a plunger type switch that closes an electrical circuit when the plunger is depressed and prevents operation of the motor when a collection cartridge is not in place.

30. The apparatus according to claim 23 further comprising an oil/grease separator unit.

31. The apparatus according to claim 30, wherein the oil/grease separator unit is connected to the cartridge holder assembly by an inlet to deliver separated oil/grease to the cartridge holder assembly.

32. The apparatus according to claim 23, wherein the cartridge holder assembly includes a cartridge locating notch to prevent rotation of the grease collection cartridge within the assembly.

33. The apparatus according to claim 28, further comprising a pump driven by the motor.

34. The apparatus according to claim 33, wherein the pump delivers water and grease from the cartridge holder assembly into the cartridge housing.

35. The apparatus according to claim 28, wherein the motor rotates the mixing baffle in the cartridge housing.

36. The apparatus according to claim 35, wherein the motor rotation of the mixing baffle within the cartridge housing mixes grease, water and reactant.
37. The apparatus according to claim 23, wherein the cartridge holder assembly has a water inlet to allow water into the cartridge holder assembly.
38. The apparatus according to claim 37, wherein the water inlet has a solenoid valve.
39. The apparatus according to claim 38, wherein the solenoid valve controls the flow of water through the inlet into the cartridge holder assembly.
40. The apparatus according to claim 23, wherein the cartridge holder assembly has a heater.
41. The apparatus according to claim 40, wherein the heater provides sufficient heat to keep the grease in liquid form.
42. The apparatus according to claim 41, wherein the heater is an immersion type heater.
43. The apparatus according to claim 41, wherein the heater is an external heater.
44. The apparatus according to claim 23, wherein the cartridge holder assembly includes liquid level sensors.

45. The apparatus according to claim 44, wherein the sensors include a grease full sensor that signals when the cartridge holder assembly contains a quantity of grease appropriate to be transferred into the cartridge housing.

46. The apparatus according to claim 44, wherein the sensors include a water full sensor that signals when the cartridge holder assembly contains a desired quantity of water.

47. The apparatus according to claim 23, wherein the cartridge holder assembly further comprises a control system.

48. The apparatus according to claim 47, wherein the control system receives signals from sensors and activates a pump and motor.

49. The apparatus according to claim 23, wherein the cartridge holder assembly further includes an oil/grease inlet.

50. A cartridge holder assembly comprising  
a container to store oil/grease for conversion to soap,  
an oil and grease inlet to the container adapted to be connected to an oil/grease separator unit,  
a heater providing heat to keep grease in the container in liquid form,  
a grease full sensor that signals when the container contains a selected quantity of grease,  
a water inlet to the container with a valve controlling the flow of water into the container through the water inlet,

a water full sensor that signals when the container contains a selected quantity of water,

a receiver for receiving a cartridge, a cartridge-locating notch in the receiver portion to prevent rotation of the cartridge in the receiver,

a pump and a motor driving the pump to deliver water and grease from the container into a grease collection cartridge placed within the receiver and to rotate a mixing baffle within a cartridge to mix grease, water and reactant into soap, and

a control responsive to the sensors to actuate the valve and the motor.

51. A cartridge holder assembly comprising

a container to store oil/grease for conversion to soap,

an oil/grease inlet to the container adapted to be connected to an oil/grease separator unit,

a water inlet to the container,

a receiver for receiving a grease collection cartridge,

means to deliver water and grease from the container into a oil/grease collection cartridge placed in the receiver, and

means to agitate the grease, water and reactant within the cartridge to mix grease, water and reactant into soap.

52. A cartridge holder assembly as claimed in claim 51 further comprising an oil/grease separator unit connected to the container by the oil/grease inlet, such that grease transfers from the oil/grease separator unit to the container.



53. The assembly according to claim 51, wherein the receiver has a cartridge locating notch to prevent rotation of a grease collection cartridge within the receiver.

54. The assembly according to claim 51, wherein the agitation means includes an electric motor.

55. The assembly according to claim 54, wherein the agitation means includes a power circuit to the motor and a switch that indicates when a cartridge is in the receiver and prevents operation of the motor when no cartridge is in the receiver.

56. The assembly according to claim 51, wherein the agitation means includes a pump driven by a motor to deliver water and grease from the container into a grease collection cartridge in the receiver.

57. The assembly according to claim 56, wherein the motor is adapted to rotate a mixing baffle in a grease collection cartridge in the receiver to mix grease, water and reactant.

58. The assembly according to claim 51, wherein the container further includes a water inlet to allow water into the container.

59. The assembly according to claim 58, wherein the water inlet includes a solenoid valve to control the flow of water into the container.

60. The assembly according to claim 51, wherein the container has a grease full sensor that signals when the container contains a desired quantity of grease and a water full sensor that signals when the container contains a desired quantity of water.

61. The assembly according to claim 60, further including a control system that receives signals from the sensors and activates the agitation means.

62. The assembly as claimed in claim 51 wherein the agitation means includes an electric motor, a power circuit to the motor and a switch that indicates when a cartridge is in the receiver and prevents operation of the motor when no collection cartridge is in place and a pump driven by a motor to deliver water and grease from the container into the grease collection cartridge further comprising:

a grease full sensor that signals when the container contains a quantity of grease appropriate to be transferred into a grease collection cartridge,

a water full sensor that signals when the container contains a desired quantity of water, and

a control system that receives signals from the sensors and activates the motor if the switch indicates that a cartridge is in the receiver, grease full sensor signals that the container contains a quantity of grease appropriate to be transferred into a grease collection cartridge, and the water full sensor signals that the container contains a desired quantity of water.

63. The assembly as claimed in claim 62 further comprising a water inlet to allow water into the container including a solenoid valve to control the flow of water through the inlet into the container,

wherein the control system opens the solenoid valve if the grease sensor signals that the container contains a quantity of grease appropriate to be transferred into the grease collection cartridge and the water full sensor does not signal that the container contains a desired quantity of water.

64. A cartridge holder assembly comprising:  
a tank with an inlet valve connected to an oil/grease separator unit;  
a cartridge support including a cartridge locating notch in the bottom of the cartridge support;  
a pump driven by a motor to remove oil and grease from the tank;  
a water inlet with a solenoid valve to control water flow into the tank;  
a heater to provide sufficient heat to keep grease in the tank in liquid form; and  
sensors to determine levels of grease and water in the tank.

65. A method for conversion of kitchen waste grease to a landfill-acceptable solid comprising:  
installing an oil/grease separator on a kitchen sink at a commercial kitchen facility;  
connecting the oil/grease separator to a cartridge holder assembly; and  
placing a grease collection cartridge containing a reactant package within the cartridge holder assembly.

66. A method as claimed in claim 65, further comprising separating oil/grease from kitchen sink in the oil/grease separator.

67. A method as claimed in claim 66, further comprising transferring oil/grease from the oil/grease separator to the cartridge holder assembly.

68. A method as claimed in claim 65, further comprising pumping a selected amount of water into the cartridge holder assembly.

69. A method as claimed in claim 65, further comprising transferring a sufficient amount of water, and oil/grease into the collection cartridge to react with a reactant package included within the collection cartridge to solidify the oil/grease into soap.

70. A method as claimed in claim 65, further comprising engaging a motor on the cartridge holder assembly to rotate a mixing baffle within the grease collection cartridge until water, oil/grease and reactant solidifies into soap.

71. A method for conversion of kitchen waste grease to a landfill-acceptable solid comprising:

separating oil/grease from kitchen waste effluent;

directing the oil/grease into a housing; and

reacting the oil/grease with a reactant in the housing so as to solidify the oil/grease to a form acceptable for landfill disposal.

72. A method as claimed in claim 71 wherein reacting includes agitating the housing to mix oil/grease and reactant.

73. A method as claimed in claim 72 wherein agitating includes rotating a baffle within the housing.
74. A method as claimed in claim 72 wherein agitating includes shaking the housing.
75. A method as claimed in claim 72 wherein agitating includes kneading the housing.
76. A method as claimed in claim 72, wherein agitating includes applying ultrasonics to the oil/grease and reactant.
77. A method as claimed in claim 72, wherein agitating includes bubbling air through the oil/grease and reactant.
78. A method as claimed in claim 71, wherein directing includes directing water into the housing to dissolve reactant within the housing.
79. A cartridge for converting waste oil/grease to a solid suitable for disposal in a landfill comprising:  
a housing to receive oil/grease, and  
a reactant in the housing having the property of chemically combining with oil/grease in the housing to form a solid.
80. A cartridge as claimed in claim 79, wherein the quantity of the reactant is sufficient to react with a volume of grease determined by an internal volume of the housing.

81. A cartridge as claimed in claim 79, wherein the reactant is sodium hydroxide and is present in an amount of about 13.2% to about 18.4% of the weight of a volume of oil/grease to be received in the housing.

82. A cartridge as claimed in claim 81, wherein the reactant includes dipropylene glycol.